In response to the Examiner's objection to the drawings, specification including the abstract, objection to the claims under 37 C.F.R. 1.75(e) and rejection of claim 18 under 35 U.S.C. § 112, second paragraph, Applicant has amended the drawings, specification and claims and enclosed a new abstract to eliminate all the problems identified by the Examiner. Applicant respectfully submits that the objection to the drawings, specification and claims and rejection of the claims under 35 U.S.C. § 112, second paragraph, have now been overcome.

The Examiner has further rejected claims 1-5 and 17-18 under 35 U.S.C. § 102(b) as being anticipated by either Foucault '579 or McFadden '711. Applicant respectfully traverses both of these rejections for the following reasons.

Foucault

Foucault discloses an apparatus for mixing floury materials such as plaster. More specifically, water passing out through orifices 12 is mixed with plaster falling on a distributor head 9. The mixture is then scraped of the wall of a chimney enclosing said distributor head 9 by means of blades 11, which compress the mixture and force it into a throttle passage 7. Thereafter the mixture is forced by the rotation of blades 15 towards an outlet 16 of the apparatus.

The blades 11 introduce annular layers of the components (water and plaster) in an already mixed state

into the passage 7. The mixture is further mixed in said passage, which is said to result in a very intimate mixture.

It should be noted that the blades 11 do not join the components in layers.

Thus, the Foucault apparatus differs from the inventive device according to claim 1 in many aspects.

For example, the apparatus according to Foucault does not comprise

- a means for joining the components in layers;
- a receiving means with a receiving surface facing a layering means and being arranged radially outwardly the same. It is evident from claim 1 and also from the description, for instance on page 8, lines 36-37 and on page 9, lines 1-2 that it is the receiving surface of the receiving means that should be arranged radially outwardly the layering means;
- a layering means adapted to alternately dispose the components in the form of thin layers in the receiving surface; and
- a receiving means adapted to support, while rotating, a stratum of layer structure formed by said alternately disposed thin layers of said components.

Thus, Applicant respectfully submits that the inventive device according to claim 1 is novel in light of Foucault.

Further, the technical effect of these differences is substantial.

In the Foucault apparatus the mixing takes place in two steps. First water and plaster are joined in the bottom of the chimney. Thereafter, the mixture is introduced into the passage, in which further mixing takes place. In both cases the mixing is random and therefore is it not possible to ensure homogeneous mixing.

In the inventive device according to claim 1 thin layers of the components are alternately disposed on the receiving surface in order to form a stratum of layer structure. Then this layer structure is deformed, thereby resulting in a homogeneous mixing of the components.

Thus, while the mixing in the Foucault apparatus is random, the mixing in the inventive device is forced, thereby making it possible to ensure homogeneous mixing.

The skilled man, facing the problem posed by the Foucault apparatus, i.e. to ensure homogeneous mixing, has no reason to modify the Foucault apparatus in accordance with the above identified differences. On the contrary, the description of Foucault states that the mixing is very intimate, thereby indicating that no problem with regard to the quality of the mixing exists.

Hence the conclusion must be that the inventive device according to claim 1 also shows inventive step over Foucault.

McFadden

The Examiner has further rejected the claimed invention as being anticipated by McFadden. Applicant does not agree.

McFadden discloses an apparatus for homogenizing mixed liquid ingredients containing oily substances. More specifically, the liquid ingredients pass from a mixer to a housing 12 through openings 15 towards two blades rotating in opposite direction when the housing rotates. These blades have sharp edges which, when the oily globules pass over to an adjacent blade due to the rotation of the blades, will cut, tear and shave the globules to smaller globules. The inner face of each blade is provided with pockets 16 in such a way that when the globules are released from a sharp cutting edge they are impacted against these pockets 16. These pockets 16 are so close that they provide therebetween cutting edges 17, thereby cutting the globules even more. Thus, the mixed liquid ingredients are further mixed at the blades in a random way, resulting in a more homogenized liquid.

It should be noted that the liquid already is in a mixed state, i.e. not divided in every single ingredient, when introduced into the apparatus and that the blades thereby do not and cannot possibly join the ingredients in alternating layers.

Thus, the McFadden apparatus differs from the inventive device according to claim 1 in many aspects.

For example, the apparatus according to McFadden does not comprise

- a means for joining the components in layers;
- a means for deforming the layer structure;
- a receiving means with a receiving surface facing a layering means and being arranged radially outwardly the same. It is evident from claim 1 and also from the description, for instance on page 8, lines 36-37 and on page 9, lines 1-2 that it is the receiving surface of the receiving means that should be arranged radially outwardly the layering means;
- a layering means adapted to alternately dispose the components in the form of thin layers in the receiving surface to form a stratum of layer structure; and
- a receiving means adapted to support, while rotating, the stratum.

Thus, the inventive device according to claim 1 is novel in comparison with McFadden.

Further, the technical effect of these differences is substantial.

The liquid ingredients are already in a mixed state when introduced into the McFadden apparatus but since

it concerns ingredients that are hard to mix with other ingredients, like for instance oil, the oily globules have to be made smaller to make the liquid ingredients more homogenized mixed. However, the mixing in McFadden's apparatus is made random and therefore cannot a homogenize mixing be ensured.

In the inventive device according to claim 1 thin layers of the components are disposed on the receiving surface in order to forma stratum of layer structure. The this layer structure is deformed, thereby resulting in a homogeneous mixing of the components.

Further, if the skilled man would face the problem posed by the McFadden apparatus, i.e. to ensure homogeneous mixing, he has no reason to modify the McFadden apparatus in accordance with the above-identified differences. Since the description of McFadden indicates that the mixing results in a stable homogenized product there are no indication that the McFadden apparatus needs any modifications to overcome the problem.

If he despite of this lack of indications would think of modifying the McFadden apparatus he would not make all the amendments needed in accordance to the above-identified differences to obtain the inventive device. All these amendments would completely change the whole idea with the McFadden apparatus, namely to make the oily globules smaller and thereby mixing the liquid ingredients more.

Even if he, contrary to expectation, made all these amendments he would still not be able to join the ingredients in alternating layers since the liquid ingredients are in a mixed state when introduced into the apparatus.

Consequently, the conclusion must be that the inventive device according to claim 1 also shows inventive step over McFadden.

Thus, the inventive device according to claim 1 is now shown to be novel as well as involve an inventive step.

Attached hereto is a marked-up version of the changes made to the title, specification and claims by the current amendment. The attached version is captioned "**Version with Markings to Show Changes Made**".

Applicant submits that the invention is new and unobvious and not disclosed by the cited art. Accordingly, Applicant respectfully solicits the Examiner's early review and issuance of this application.

Respectfully submitted,

BROWDY AND NEIMARK, P.L.L.C.
Attorneys for Applicant(s)

By _____
Norman J. Latker
Registration No. 19,963

NJL:btd
Telephone No.: (202) 628-5197
Facsimile No.: (202) 737-3528
G:\BN\A\Awap\Andersson13\PTO\Amd dec02.doc

"Version with Markings to Show Changes Made"

IN THE TITLE

Please amend the title as follows:

DEVICE AND METHOD FOR CONTINUOUS MIXING OF AT LEAST TWO COMPONENTS.

IN THE SPECIFICATION

Please insert the following subheading on page 2 between lines 21 and 22:

--Object and Summary of the Invention--.

Please delete the subheading on page 2, line 32.

Please amend the paragraph on page 2, lines 33-36, as follows:

According to the invention, the first object is achieved by a device for continuous mixing ~~according to claim 1. Preferred embodiments of the device are stated in claims 2-16~~.

Please amend the paragraph on page 3, lines 1-3, as follows:

According to the invention, the second object is achieved by a method ~~according to claim 17. A preferred~~

~~embodiment of the method is stated in claim 18~~for mixing at least two components.

Please amend the paragraph on page 7, lines 23-24, as follows:

Fig. 2 is a cross-sectional view of the device along line ~~A-A~~2-2 in Fig. 1.

Please amend the paragraph on page 7, lines 27-28, as follows:

Fig. 4 is a cross-sectional view of the device along line ~~A-A~~4-4 in Fig. 3.

Please amend the paragraph on page 7, lines 29-30, as follows:

Fig. 5 is a cross-sectional view of the device along line ~~B-B~~5-5 in Fig. 3.

IN THE CLAIMS

Please amend claims 1-18 as follows:

1. (Amended) A device for continuous mixing of at least two components , such as liquids and/or powders, comprising

a first means (8, 15; 108, 115) for joining the components in layers, and

a second means (6, 18; 101, 129) for discharging the joined components during simultaneous deformation of a layer structure, obtained in the joining, to provide a homogeneous mixture of components,

~~characterised in that~~wherein the first means (8, 15; 108, 115) comprises

a layering means (8; 108) and

a receiving means (15; 115) rotatable about a longitudinal axis (13; 113) and having a receiving surface (22; 122) facing the layering means (8; 108) and arranged radially outwardly of the same,

the layering means (8; 108) being adapted to alternately dispose the components in the form of thin layers on the receiving surface (22; 122) to form a stratum of layer structure, and

the receiving means (15; 115), while rotating, being adapted to support said stratum.

2. (Amended) A device as claimed in claim 1, ~~characterised in that also~~wherein the layering means (8; 108) is also rotatable about said longitudinal axis (13; 113).

3. (Amended) A device as claimed in claim 2, ~~characterised in that~~wherein the layering means (8; 108) is rotatable in a direction of rotation (P_1; P_{101}) which is

opposite to the direction of rotation (P_2; P_{102}) in which the receiving means (15; 115) is rotatable.

4. (Amended) A device as claimed in claim 2~~ or 3~~, ~~characterised in that~~wherein the layering means (8; 108) is rotatable with a first angular velocity (ω_1, ω_{101}), and the receiving means (15; 115) is rotatable with a second angular velocity (ω_2, ω_{102}) differing from the first angular veloecity ((ω_1, ω_{101}).

5. (Amended) A device as claimed in claim 4, ~~characterised in that~~wherein the first angular velocity (ω_1; ω_{101}) is in the range 30-85 rad/s.

6. (Amended) A device as claimed in claim 4~~ or 5~~, ~~characterised in that~~wherein the second angular velocity (ω_2, ω_{102}) is in the range 30-85 rad/s.

7. (Amended) A device as claimed~~ in any one of the preceding claims~~ in claim 1, ~~characterised in that~~wherein the layering means comprises a nozzle for each of the components, each nozzle being adapted to dispose thin layers of the component supplied thereto on the receiving surface (22; 122).

8. (Amended) A device as claimed ~~in any one of claims 2-6~~ in claim 2, ~~characterised in that~~wherein the layering means (8; 108) comprises a blade means (10; 110) which is rotatable about said longitudinal axis (13; 113) and which during rotation is adapted to engage with the components supplied thereto and subsequently throw them away to dispose thin layers of the components on the receiving surface (22; 122).

9. (Amended) A device as claimed ~~in any one of the preceding claims~~ in claim 1, ~~characterised in that~~wherein the receiving means (15) is adapted to transfer the stratum to the second means (6, 18).

10. (Amended) A device as claimed in claim 9, ~~characterised in that~~wherein the receiving means (15) comprises a body (17) having a conical interior circumferential surface (22) arranged concentrically about the longitudinal axis (13) and thus enclosing the layering means (8) and forming said receiving surface (22), the receiving means (15), during rotation and under the action of centrifugal forces, being adapted to convey said stratum towards the wider end (11) of the conical receiving surface (22), at which end (11) the stratum will be transferred to the second means (6, 18) in consequence of the rotation of the receiving means (15).

11. (Amended) A device as claimed in claim 10, ~~characterised in that~~wherein the second means (6, 18) comprises a helical duct (6) which encloses the receiving means (15) and has a side open towards the receiving means (15), whereby the stratum continuously transferred from the receiving means (15) will be collected by said duct (6).

12. (Amended) A device as claimed in claim 11, ~~characterised in that~~wherein the second means (6, 18) comprises in unison with the receiving means (15) rotatable discharge means (18), and that the duct (16) comprises an outlet connected thereto, the discharge means (18) being adapted to convey to the outlet (7) the stratum transferred to the duct (6) during deformation of its layer structure.

13. (Amended) A device as claimed in claim 12, ~~characterised in that~~wherein each discharge means (18) comprises a vane (18) which is attached to the receiving means (15) and displaceable in the duct (6) and which during rotation of the receiving means (15) engages with the stratum transferred to the duct (6) and conveys it during simultaneous creasing thereof towards the outlet (7).

14. (Amended) A device as claimed ~~in any one of claims 1-8~~ in claim 1, ~~characterised in that~~wherein the

second means (101, 129) comprises a scraper element (129) for scraping off the stratum from the receiving surface (122), and that the receiving means (115) is adapted to transfer, during rotation thereof, the thus scraped-off stratum to a discharge unit (101) of the second means (101, 129).

15. (Amended) A device as claimed in claim 14, ~~characterised in that~~wherein the receiving means (115) comprises a body (117) having a cylindrical interior circumferential surface (122) which is concentrically arranged about the longitudinal axis (113) and which thus encloses the layering means (108) and forms said receiving surface (122), and that the scraper element (129) is arranged along the receiving surface (122) for scraping off the stratum from the receiving surface (122), said deformation of the stratum being provided during said scraping off.

16. (Amended) A device as claimed in claim 15, ~~characterised in that~~ wherein the scraper element (129) comprises a helical band element (129) which is extended parallel with the longitudinal axis (113) and which is arranged along the cylindrical receiving surface (122), the receiving means (115) being rotatable with a second angular velocity and the band element (129) being rotatable about

the longitudinal axis (113) with a third angular velocity (ω_{103}) differing from said second angular velocity (ω_{102}), whereby the stratum formed on the receiving surface (122), during rotation of the receiving means (122) as well as the band element (129), is continuously conveyed to a discharge position (119) from which the stratum will be transferred to the discharge unit (101) of the second means (101, 129).

17. (Amended) A method for mixing at least two components, comprising the steps of

joining the components in layers, and

subsequently conveying the thus-joined components in such a manner that a layer structure obtained in connection with the joining is deformed to form a homogeneous mixture of components,

~~characterised in that~~wherein

the step of joining the components comprises the steps of

alternately disposing, with the aid of a layering means (8; 108), thin layers of the components on a receiving means (15; 115) radially enclosing the layering means (8; 108) to form a stratum of layer structure, and

by rotation of the receiving means (15; 115) supporting the stratum,

the layers in the circumferential direction being distributed uniformly on the receiving means (15; 115) in consequence of its rotation.

18. (Amended) A method as claimed in claim 17, ~~characterised by~~wherein the steps of rotating the layering means (8; 108) with a first angular velocity (ω_1; ω_{101}), and rotating the receiving means (15; 115) with an angular velocity (ω_2; ω_{102}) differing from the angular velocity (ω_1; ω_{101}) of the layering means (8; 108), whereby the layering means (8; 108) engages with said components supplied thereto and throws them in the form of thin layers to the receiving means (15; 115).

Approved C. Cooley

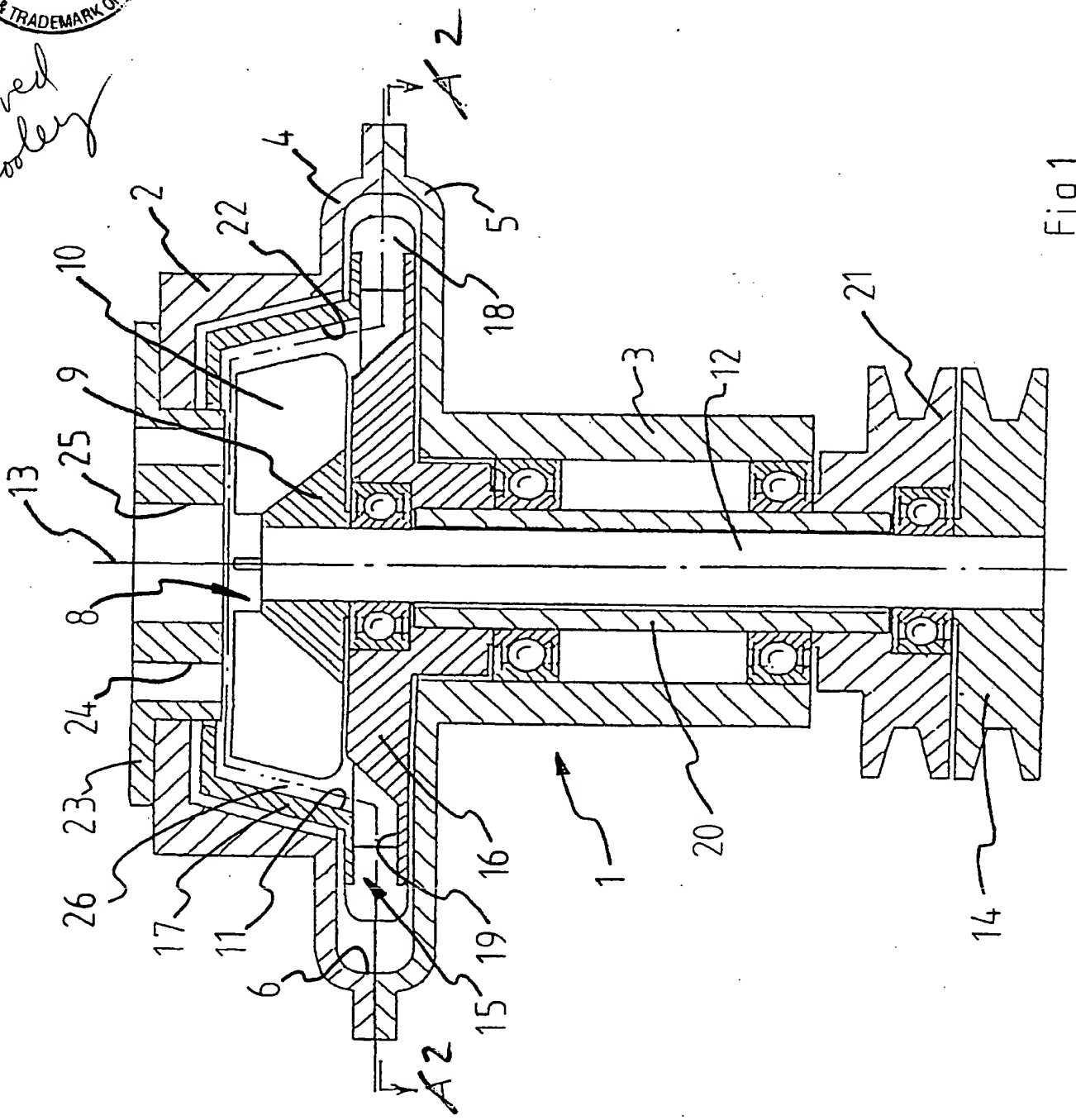

Fig 1

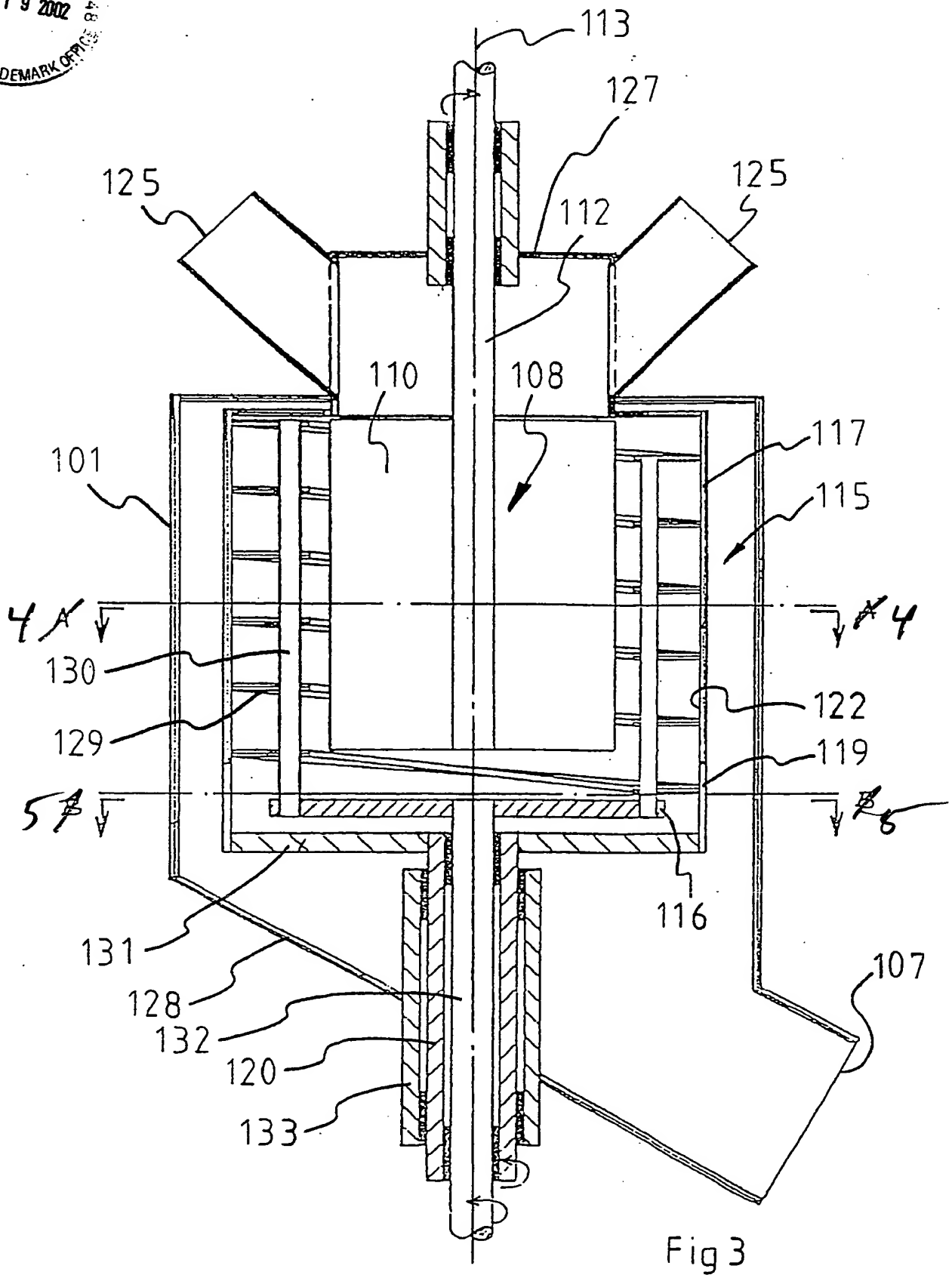

Fig 3